

I. Tailings Pond

A. Request for discharge rate of 2.9 bgy/One of the Reasons -

Cominco has requested the higher discharge rate in order to have greater flexibility in managing the water elevation of the tailing impoundment. Under the ceiling imposed by the total annual limit, Cominco's choice of discharge rate is based on these considerations:

- The need to maintain the tailing pond at a safe and practical elevation, in order that:
 1. A spillway release would not occur
 2. 10 ft of water is maintained above the tailings to prevent wind dispersion and oxidation
 3. adequate water is available for mill process
- Compliance with the State of Alaska SSC for TDS at station 73
- The maximum effluent treatment rate, determined by wastewater treatment plant capacity and associated piping.

See page 2-6, Environmental Information Document, October 1997, Vol. I

Page 4-51 states that "The need for the increased discharge limit is related to the increased diversion of mine drainage water to the tailing impoundment and to an accumulated backlog of water in the impoundment rather than to the production rate increase."

B. Water Balance

Used a precipitation rate of 27.9 inches (Section 4 of water balance doc)
 evaporation = 9 inches (section 3 water balance doc)
 impoundment surf area = 410 acres (should be larger now)

The water balance showed that with a discharge rate of 1.44 bgy, and increase production rate, the impoundment fill around 2005 and will remain full over the remaining life. Beginning in 2001, spillover becomes significant. About 50% of the time, spillover volumes would be less than 0.6 bgy after the year 2005.

Predicted release of treated water to Red Dog Creek is almost always 1.44 bgy (from water balance document).

*See page 4-21 A Water Balance for the Red Dog Mine Kotzebue, Ak, June 1997,
 Hydrometrics, Inc.*

II. WET - did higher rainfall give them a higher limit

Permittee requested to discharge 2.4 bgy

- of the 2.4 - 1.3 bgy if from precipitation runoff from the South Fork watershed (precip on

- tailings impoundment and mine drainage directly into the tailings impoundment)
- 1.1 bgy is pumped from the dirty water ditch; of this only .3 bgy can be attributed to surface runoff; .8 bgy is mystery water
- we allowed the .8 bgy to be at the same level as upper IK toxicity levels (we figured this would not make things any worse than pre-mining)

	Flow	Toxicity
• Middle fork (diverted)	.3 bgy	35.2 TU
South Fork	1.3 bgy	6.1 TU
Mystery water	.8 bgy	2.9 TU

$$\text{WLA} = \frac{(.3 \times 35.2) + (1.3 \times 6.1) + (.8 \times 2.9)}{2.4} = 8.7 \text{ TU}$$

If we used the 19" rainfall, and the 9" as evaporation then:

Middle Fork (diverted by dirty water ditch) = .2 bgy	
South Fork	= .73 bgy
mystery water	= .9 bgy

$$\text{WLA} = \frac{(.2 \times 35.2) + (.73 \times 6.1) + (.9 \times 2.9)}{1.83} = 7.7 \text{ TU}$$